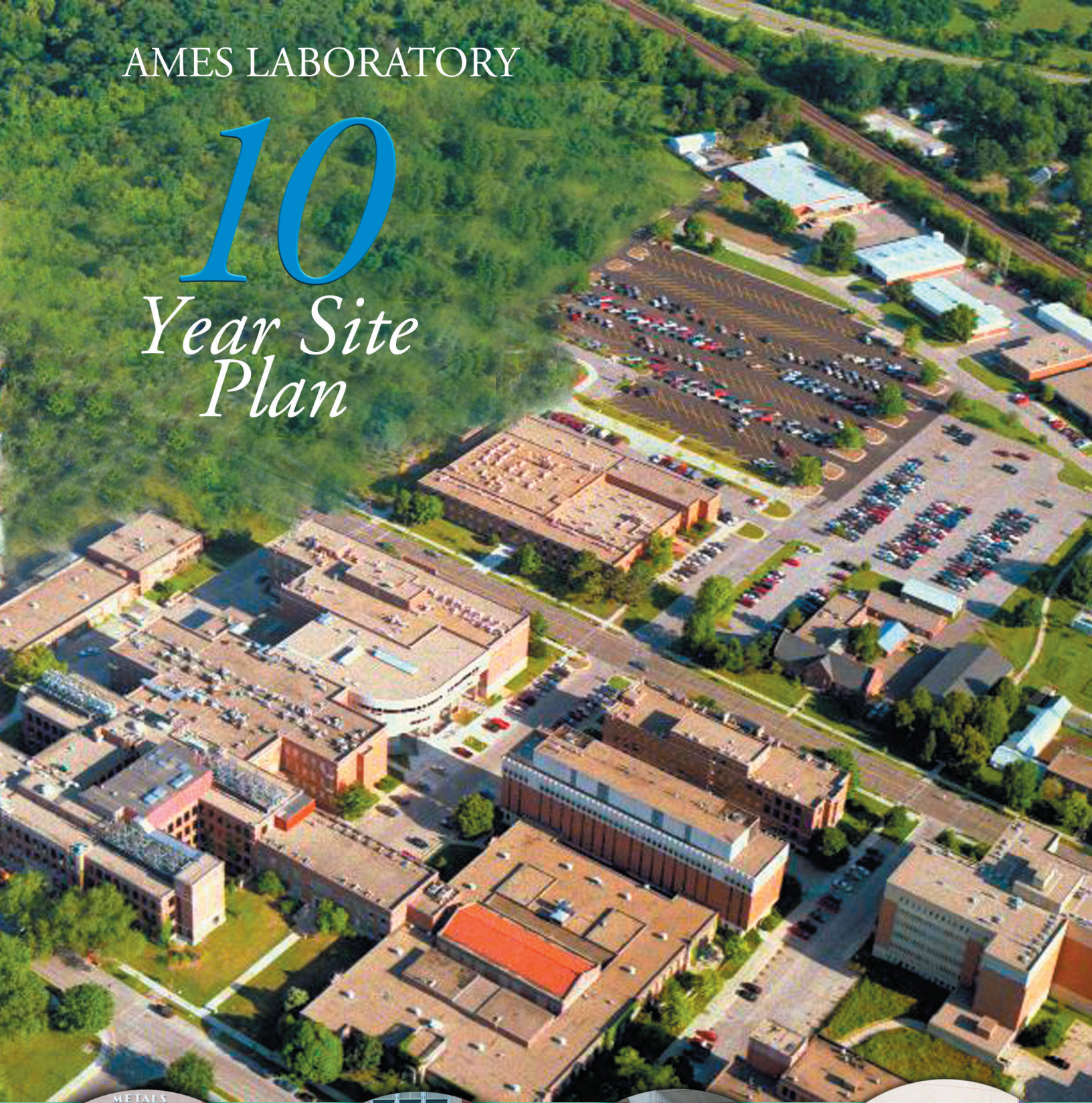
AMES LABORATORY

10 Year Site Plan



Ames Laboratory Ten Year Site Plan

2007 – 2016

Operated for the U.S. Department of Energy by Iowa State University.
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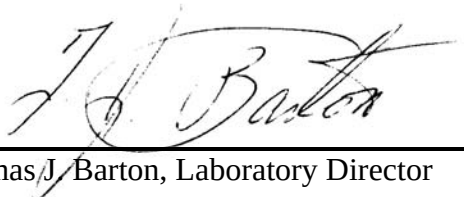
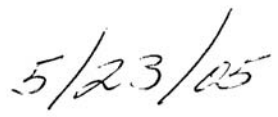


Thomas J. Barton, Laboratory Director



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1.0 Executive Summary

The U.S. Department of Energy's Ames Laboratory is a Government-owned, Contractor-operated facility located in Ames, Iowa on the campus of Iowa State University (ISU), its contractor. The Laboratory is strategically positioned to provide the Department of Energy a cost-effective facility to do world-class research. The Office of Science Program-Dedicated Laboratory operates in approximately 330,000 gross square feet of government-owned buildings with a total operating budget of $30 million in FY'04. Ames Laboratory's vision is to excel as an interdisciplinary world-class materials research laboratory with an international reputation and to build on our core areas of excellence opening new frontiers in materials research. To achieve this vision, our mission is to conduct fundamental research in the physical, chemical, materials, mathematical sciences and engineering which underlie energy generating, conversion, transmission and storage technologies, environmental improvement and other technical areas essential to national needs. Ames' goal is to utilize the results of these fundamental investigations to design and develop novel magnetic, optical, catalytic and bio-inspired materials.

In order to achieve our vision, the condition of our facility infrastructure is of utmost importance. Both the facility infrastructure and operations are managed with a philosophy of long-term stewardship in mind. Because this philosophy has been a part of the heritage of the Ames Laboratory from its beginnings, the buildings have been well maintained over their lifetimes and remain in excellent condition.

The Laboratory is integrated into the ISU campus through a symbiotic relationship that provides a very flexible, dynamic, efficient and powerful structure. The Laboratory is situated on land under long-term lease to the Federal Government from Iowa State University. The lease has been and will be adjusted as necessary to accommodate the facility needs of the Laboratory. The Land Use Plan for the Laboratory is incorporated into the Ten Year Site Plan as Section 4. Operating on the university campus within the city of Ames allows the Laboratory to enjoy the benefits of the university/municipal infrastructure and operations without the responsibility for its capital investment or maintenance. This infrastructure includes such things as steam plant, chiller plant, water treatment plant, sewage system, landscaping, telecommunications and roads. This allows the Laboratory to focus its efforts on maintaining and operating core facilities that have direct impact on the research effort. The relationship with ISU also enables the Laboratory to use space in University–owned buildings through a space usage agreement without investing in permanent space or long-term leases. It provides a greater flexibility for the "footprint" to change according to the mission need without requiring new construction. It also enhances the ability to utilize research resources across the ISU campus and to perform interdisciplinary collaborations with ISU research staff.

The major new facility initiative proposed in the Ten Year Site Plan is the Ames Plant Metabolomics Resource Facility. This new initiative will build and equip a 90,000 gross square foot building to provide a national facility for plant metabolomics. It will combine the Laboratory's strengths in analytical and computational sciences and ISU's strengths in plant sciences to allow biologists to conduct genome-wide metabolite profiling, create the next generation of instrumentation for metabolomic investigation, develop computational methods for metabolomics, and provide a resource for national and international collaboration. In addition to

this, Ames has proposed new initiatives in Bioinspired Materials, Computational Sciences and a Nanomaterials Characterization Facility, along with the Electrostatic Levitator**,** a unique new analytical system. Existing Ames Laboratory facilities and the relationship with ISU can uniquely support these new initiatives.

The Ames Laboratory facility is maintained in excellent condition. The overall facilities condition index is 2.6% and is on a slight downward trend. This rating has been accomplished with modest maintenance expenditures of approximately 1.5% to 1.7% of replacement plant value (RPV). This level of spending has been adequate for a number of reasons. The buildings were well designed and built. They have been well maintained over their lifetimes so that maintenance problems have not compounded themselves into more costly solutions. Capital improvement funds have been used judiciously to make betterments to the facility and improve the condition of aging systems. Many of the high maintenance utility generation and distribution systems are provided and maintained as part of the contractor's campus infrastructure. Maintenance expenditures are evaluated and set in conjunction with other resource requirements to maximize the overall mission effectiveness of the Laboratory, keeping a long-term view in mind. Laboratory management will not mortgage the long-term condition of the facilities to achieve short-term output. The deferred maintenance reduction (DMR) funding program proposed by the Office of Science will enable the Laboratory to reduce the FCI on the existing facilities to less than 1.5% in the next five years. Without the DMR funding, the current level of funding will still control the FCI at approximately 2.3% which is near the top adjectival rating in both the self assessment and the FIMS rating systems. The condition rating of the facilities is further validated by occupant survey results where 70% of the respondents rate the facilities as outstanding. The Laboratory already meets the Office of Science goal that all "Mission Critical" facilities are rated Good or better and all "Mission-Dependent, not Critical" facilities be rated Adequate or better. All of these elements coincide to make the Ames Laboratory an outstanding location for performing world-class research.

2.0 Site Summary

The U.S. Department of Energy's Ames Laboratory is a Government-owned, contractor-operated facility located on the campus of and operated by Iowa State University (ISU) in Ames, Iowa. It is one of the Program-Dedicated Laboratories within the DOE Complex operating under the Office of Science Basic Energy Sciences Program. The total FY2004 operating budget of the Laboratory was $30 Million. In FY2004, there were approximately 660 people on staff representing a full-time equivalent staff of 318. The number of people actively involved in operations is greater than the full-time equivalents because a significant number of people have less than full-time appointments. This includes graduate students, research associates and staff with split appointments with corresponding University Departments. The Ames Laboratory is integrated with the university community as a member of the Institute for Physical Research and Technology (IPRT). IPRT is a network of scientific research centers at Iowa State University. The Ames Laboratory, the foundation of the network, is the first and largest of the IPRT centers. In addition to performing world-class scientific research, IPRT provides a wide variety of technical assistance to Iowa companies. Iowa State University of Science and Technology is a land-grant university chartered in 1858. The campus includes nearly 2,000 acres and more than 160 buildings. Iowa State University is a recognized leader in many areas of science and

technology, including material sciences, analytical chemistry, physics, plant and animal genomics, behavioral studies, and many areas of engineering.

The organization that ultimately became the Ames Laboratory originated as a part of the Office of Scientific Research and Development in the early days of the Atomic Energy Program. The initial work at Ames was carried out in the Iowa State University Chemistry Building in 1942 and involved the development of a process for the production of uranium metal in large quantities. Following the successful development of the most efficient process to produce high-purity uranium metal in large quantities for atomic energy, Iowa State University established the Institute for Atomic Research in 1945. With the creation of the Atomic Energy Commission (AEC), the Ames Laboratory was formally established as one of the AEC multi-program laboratories in 1947, to be operated by Iowa State University through the Institute. In 1949, the University built a three-story, 30,000 gross square foot building to contain the new Institute and Laboratory. Expansion of the Ames Laboratory was accommodated in new buildings funded by the Atomic Energy Commission. The first federally-owned building was designed for laboratory occupancy and was constructed in 1949. Additional laboratory occupancy buildings were completed in 1953 and 1961. One of the research buildings had additions constructed in 1967, 1984 and 1988 with General Plant Project (GPP) funds. Several small auxiliary buildings were constructed with GPP funds during the 1960's. The last major addition was the construction of the Technical and Administrative Services Building in 1994 that houses most of the management, administrative, and technical support groups of the Laboratory. The Laboratory continues to be operated by Iowa State University.

Located in the heart of central Iowa, approximately 35 miles north of Des Moines, Ames Laboratory facilities occupy approximately 10 acres of land on the north edge of the Iowa State University campus in Ames, Iowa. The land on which the Government-owned buildings are located is under long-term, no cost lease to the Federal Government from the University. The lease line has been adjusted over the years to accommodate the facility needs of the Laboratory and the University is willing to adjust the lease as needed to accommodate new Laboratory facilities in the future. Figure 1, ISU Campus Map, shows the Ames Laboratory site relative to the rest of the campus and Figure 2, Ames Laboratory Site Plan, shows the individual Laboratory Buildings and how they are located within the University Campus. The integration of the Ames Laboratory site with the ISU campus is significant and generally beneficial. Some aspects of facilities management and maintenance are provided by ISU and are paid through contract overhead fees or on a direct-charge basis. Examples of areas maintained by ISU are streets and street lighting, parking and traffic control, most landscaping and grounds work, telecommunications, ordinary waste disposal and primary utility distribution lines. The Laboratory purchases steam and chilled water from the University district heating/cooling system, therefore, the Laboratory does not have to maintain large chillers or boiler plants.

The Ames Laboratory has 12 buildings and two real property assets categorized as Other Structures and Facilities (OSF). The buildings include three laboratory buildings, one office building, three shop buildings and five storage buildings. The OSF assets include an electrical switch pit and parking area. An aerial view, Figure 3, shows the four main buildings of the Laboratory and how the site is integrated with other University buildings on the campus. Table 1, Real Property Assets, lists detailed information regarding the age, use, construction and replacement plant value of the buildings and OSF assets. The average age of the buildings is 37

years. When pro-rated by the amount of space, the average age of space at the Laboratory is 43 years. The average age of the three research buildings is 51 years. Figure 4 shows the breakout of the age of space at the Laboratory.

While the average age of space is relatively old, the buildings were well designed and constructed for long-term stewardship. Historically, the Laboratory has placed a high priority on maintaining the assets under its stewardship. As a result, even though the buildings are relatively old they remain in good condition. The Asset Condition Index for the Laboratory facilities is 97.4% or a rating of good according to the Summary Condition field in FIMS. The three research buildings are rated in either the excellent or good categories. In fact, only 5% of the building area is less than good. They are shop facilities that are rated adequate. The Office of Science's goal is that all "Mission Critical" facilities be rated good or better in the FIMS system (FCI equals 5% or less) and all "Mission-Dependent, not Critical" facilities be rated adequate or better (FCI equals 10% or less). The Laboratory already meets and exceeds this goal.

Because of the relationship with the University, Laboratory operations can also use space in University-owned buildings adjacent to the Laboratory through a space rental agreement. This is not a lease arrangement where the Laboratory commits to using a building for an extended period of time. The arrangement is recognition of the collaborative efforts between the Laboratory and the University in individual spaces that allows both parties to leverage their effectiveness, flexibility and capabilities through sharing resources. It enables the Laboratory to utilize additional space on a short-term basis without investing in permanent space. It also supports collaborative efforts with University personnel on new or short-term initiatives without modifying permanent space for it. The arrangement tracks the collaborative space used in Laboratory and University buildings and calculates a net amount used. While over 50,000 square feet of either Laboratory or University space is involved, because of the rental agreement, the Laboratory has a net use of University space of less than 1,000 square feet.

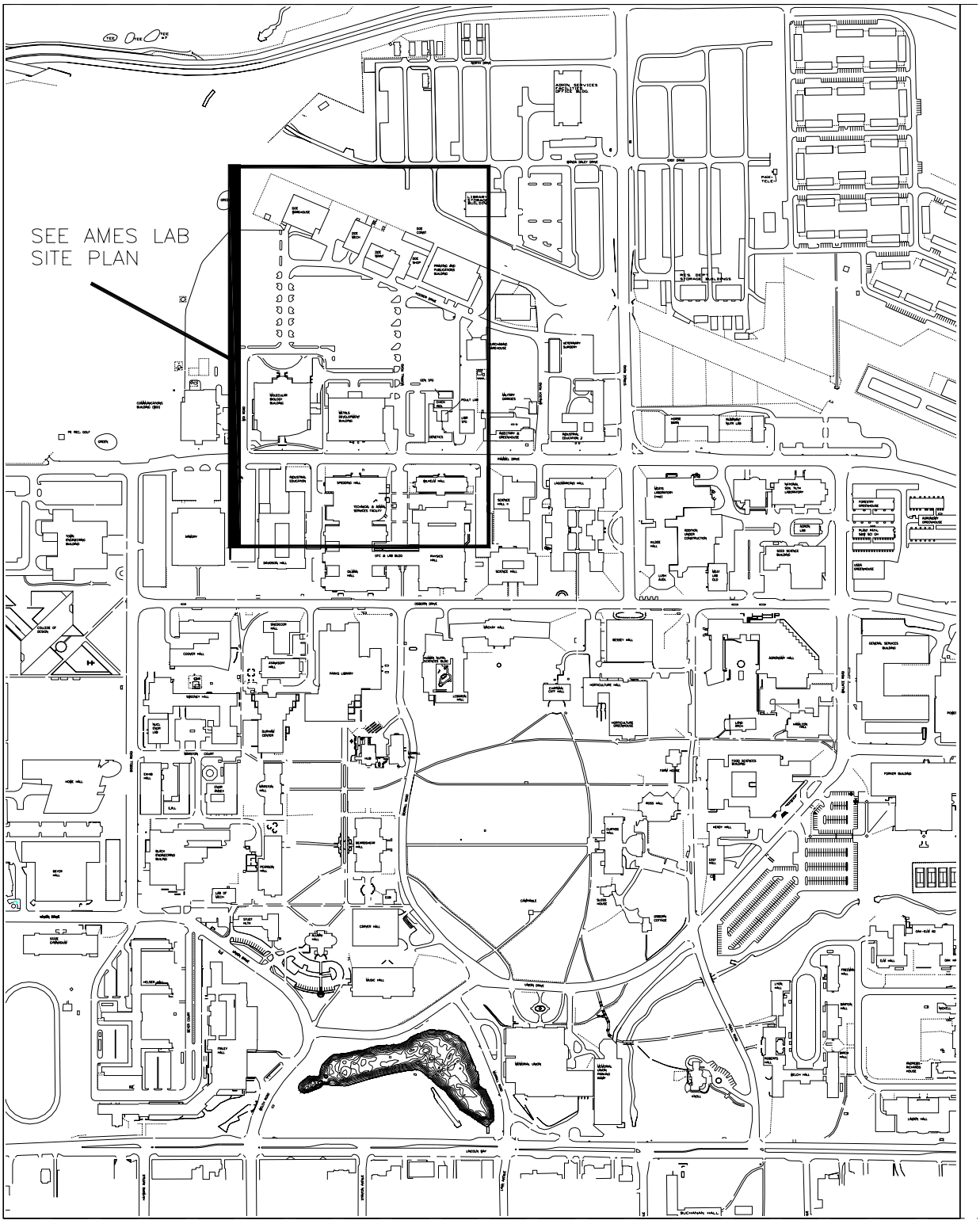


Figure 1. Iowa State University Central Campus Map

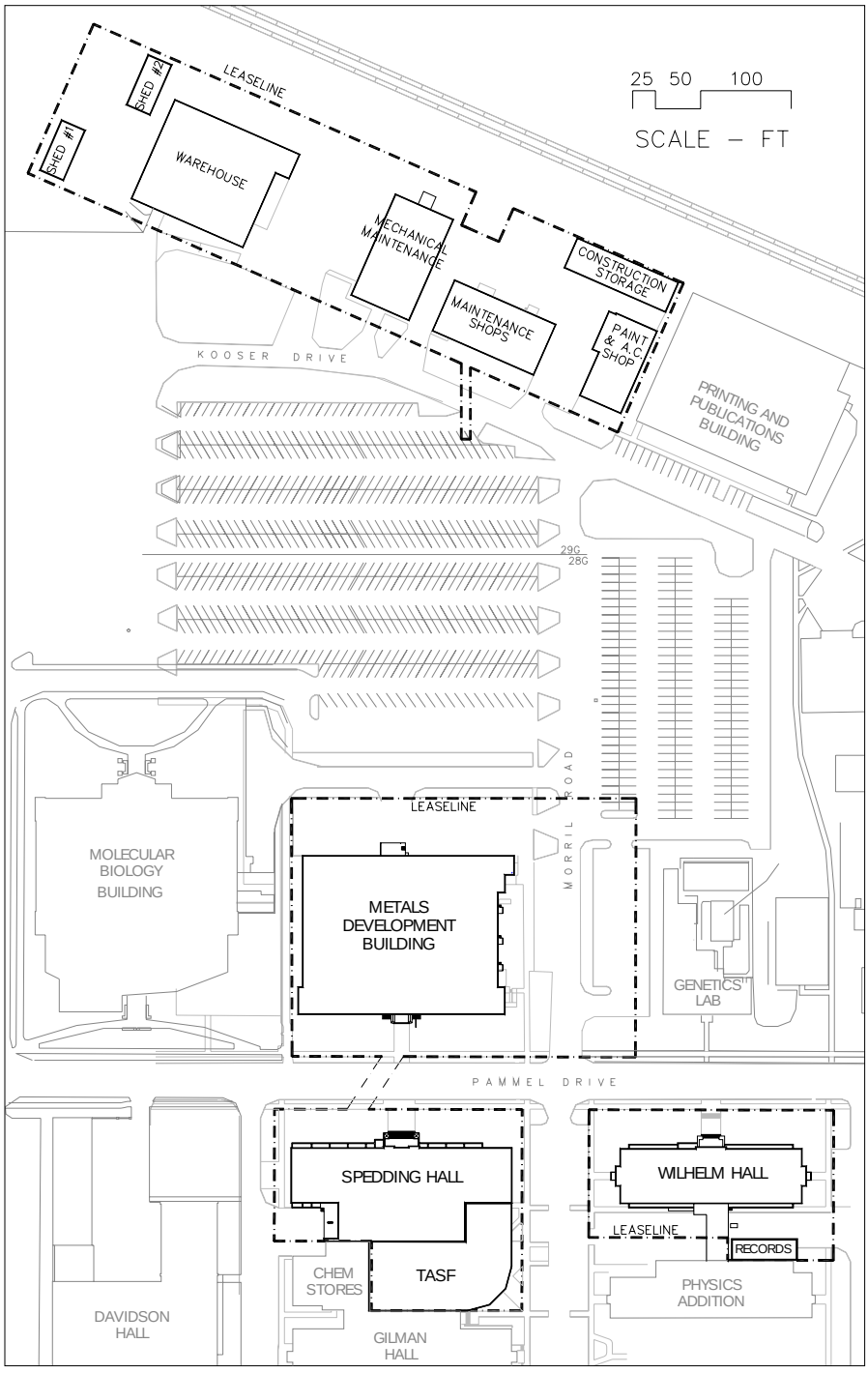


Figure 2. Ames Laboratory Site Plan

A. Spedding Hall
B. Metals Development Building
C. Harley Wilhelm Hall
D. Technical & Administrative Support Facility

Figure 3. Ames Laboratory Aerial View

Table 1. Real Property Assets

Assets	Facility use	Gross S/F	Year Built	Replacement Plant Value ($000)	Mission Dependency	Construction Type
Buildings						
Campus Warehouse	Storage	16,506	1966	1,054.8	Mission Dependent Not Critical	Steel Light Frame
Construction Storage Shed	Storage	4,440	1967	81.3	Not Mission Dependent	Steel Light Frame
Maintenance Shops Building	Shop	7,503	1967	691.4	Mission Dependent Not Critical	Steel Light Frame
Mechanical Maintenance Building	Shop	8,540	1964	587.9	Mission Dependent Not Critical	Steel Light Frame
Metals Development Building	Laboratory	69,663	1961	10,144.5	Mission Critical	Concrete Moment Frame
Paint and Air Conditioning Building	Shop	4,998	1968	650.9	Mission Dependent Not Critical	Concrete Moment Frame
Records Storage Facility	Storage	1,689	1948	229.3	Mission Dependent Not Critical	Reinforced Masonry Bear Walls/Wood, Metal Deck Diaphragm
Shed 1	Storage	1,461	1990	17.8	Not Mission Dependent	Wood Commercial & Industrial
Shed 2	Storage	1,702	1991	23.5	Not Mission Dependent	Wood Commercial & Industrial
Spedding Hall	Laboratory	107,630	1953	19,426.8	Mission Critical	Concrete Moment Frame
Technical and Administrative Service Facility	Office	46,991	1995	6,431.9	Mission Critical	Concrete Moment Frame
Wilhelm Hall	Laboratory	56,541	1949	12,965.1	Mission Critical	Concrete Moment Frame
OSF						
Parking Areas			1971	508.5	Not Mission Dependent	
Power Switch Pit			1971	174.5	Mission Critical	
TOTALS		327,664		52,946.6		

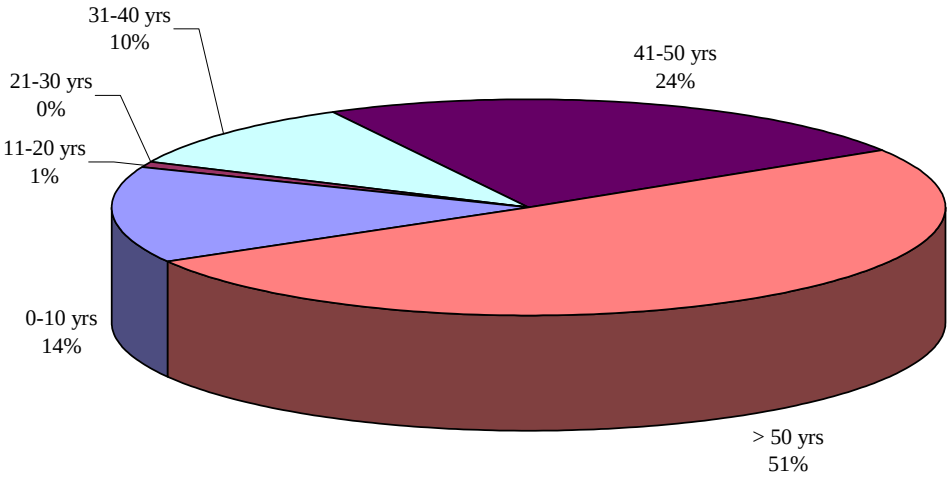


Figure 4. Facility Age (% total gsf)

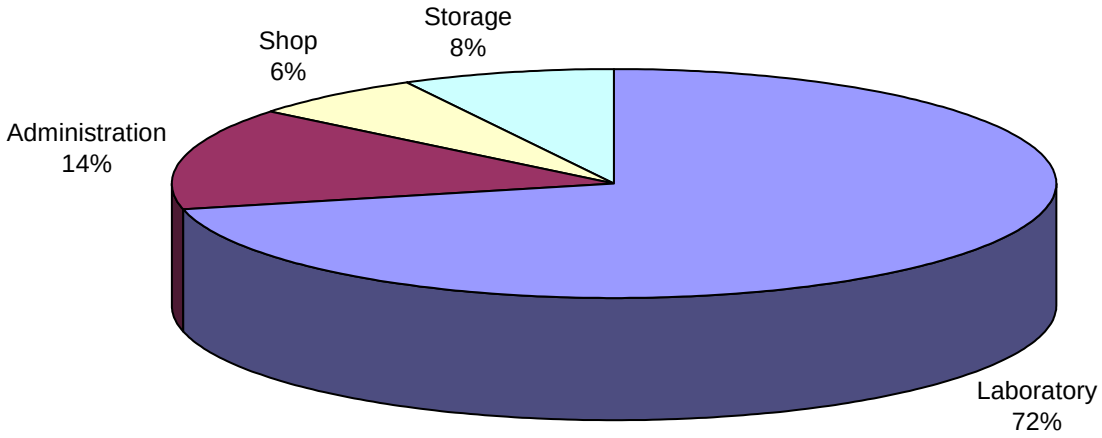


Figure 5. Laboratory Space Distribution

3.0 Mission

The Laboratory's mission is to conduct fundamental research in the physical, chemical, materials, mathematical sciences and engineering which underlie energy generating, conversion, transmission and storage technologies, environmental improvement, and other technical areas essential to national needs. These efforts will contribute to achieving the Department of Energy's Missions and Goals. More specifically, to increase the general levels of scientific knowledge and capabilities, prepare engineering and physical sciences students for future scientific endeavors, and initiate nascent technologies and practical applications arising from our basic scientific programs.

Vision for the Future
Our vision for the Ames Laboratory must be that of an interdisciplinary world-class materials research laboratory with an international reputation such that whenever "Ames" is mentioned, "materials" is the response. Ames will make extensive use of DOE's world-class user facilities, train young scientists, and open new frontiers in materials research. New opportunities for the design and control of nanoscale structures and interdisciplinary partnerships with life (plant) scientists will help develop new synthesis routes to bio-inspired materials, and bio-molecular energy sources and machines.

In fact, Ames Laboratory has proposed to DOE that a major national facility for plant metabolomics be constructed as a new facility of the Laboratory. Metabolomics includes the determination of all the metabolites (chemical products) in a cell or tissue at any given time in its development, and the determination of their roles in the entire genetic, developmental, physiological and environmental activities of the plant.

In addition to this, Ames has proposed new initiatives in Bio-inspired Materials, Computational Sciences and a Nanomaterials Characterization Facility, along with an analytical system to be located in the Materials Preparation Center, the Electrostatic Levitator (ESL). The ESL will provide users the ability to measure structures and kinetics over a wide range of temperatures while avoiding problems of sample holder contamination thus allowing fundamental studies on short and medium range order in liquids above and below the liquidus temperature, phase transformation pathways, kinetics and their effect on materials processing, thermophysical properties in relation to structure, identification of solidification pathways, including the formation of transient metastable phases and *in-situ* studies of phase evolution during heterogeneous reactions in a variety of environments. New experimental and computational techniques will allow solution of outstanding problems in magnetism, correlated electron systems, and complex materials where competing interactions lead to the discovery of new phenomena. Indeed, new computational facilities and new algorithms will allow profound insights into classic multi-scale problems such as defects limiting (or enhancing) the strength of materials and the quality of permanent magnets. Groups proficient in quantum simulations will work in partnership with experimental groups to develop nanoscale control of entangled quantum states to be used for quantum computing or new types of sensors or photonic switches.

The Nanomaterials Characterization Facility will be an integral part of the Great Plains Center for Cancer Nanotechnology (GPCCN), a partnership between the University of Nebraska

Medical Center and Ames Laboratory. If funded by NIH's RFA for Centers of Cancer Nanotechnology Excellence, the GPCCN will merge cancer expertise at UNMC (Eppley Cancer Center and NIH SPORE) with nanomaterials expertise at Ames Laboratory. Using existing DOE support and facilities as leverage, projects involving the development and characterization of nanomaterials and nanodevices for cancer diagnostics, imaging and therapy would occur at Ames.

Roles

Ames Laboratory's primary role within DOE's Office of Science, Basic Energy Sciences mission is to perform research within the materials, chemical and biological sciences "to provide the scientific knowledge and tools to achieve energy independence" and "to provide the biological and environmental discoveries necessary to clean and protect our environment, offer new energy alternatives, and fundamentally alter the future of medical care and human health."[1] To this end, the Laboratory's main goal is to deliver the scientific knowledge and discoveries in the basic energy sciences that underpin DOE missions in energy, national security and environmental quality, as well as technologies to improve human health and safety.

Ames Laboratory's scientific component is organized into 9 research programs:

- Applied Mathematics and Computational Sciences
- Biorenewable Resources Consortium
- Chemical and Biological Sciences
- Condensed Matter Physics
- Environmental and Protection Sciences
- Materials Chemistry and Biomolecular Materials
- Materials and Engineering Physics
- Multiphase Systems
- Nondestructive Evaluation (NDE)

Each uniquely contributes to many of the main goals of the DOE. The following paragraphs give a brief synopsis of the mission of each of these.

The Applied Mathematics and Computational Sciences focuses on issues of development, use and performance of advanced computer architectures with emphasis on application of parallel computers that scale to massive numbers of processors. The program addresses problems arising in science and engineering, software development to provide a suite of software tools to manage the software installation, maintenance and resource allocation systems on large-scale parallel computers, and the development of tools to enable high performance applications on scalable architectures. Inherent within the program is the Scalable Computing Laboratory (SCL). They focus on high performance computing with attention given to looking at how to make a range of machines solve a range of problems with a range of performance tradeoffs, so that the computational research that is done has lasting scientific value.

The Biorenewable Resources Consortium (BRC), is dedicated to the development and utilization of agriculturally derived alternatives to petrochemicals and other non-renewable fossil resources as a means to address the nation's dependency on non-renewable resources. Over the long-term,

[1] Department of Energy, Office of Science *Strategic Plan*, February 2004, p. 12.

the research thrusts of the BRC will change and evolve in parallel with the challenges and opportunities presented by the development of biorenewable industries.

The Chemical and Biological Sciences Program focuses on research spanning fundamental and applied projects to provide a fundamental understanding of the variety of processes that are basic to solar energy conversion in biological systems, with application to the development of new solar energy technologies. Chemical Physics is focused on the structure, bonding, reaction mechanisms and dynamics of chemically reactive systems in terms of their fundamental atomic, molecular, and electronic constituents.

The Condensed Matter Physics (CMP) program's emphasis is on discovery and understanding the basic science underpinning the development and optimization of materials for use in various energy technologies. Interdisciplinary teams have made tremendous contributions in quasicrystals, photonics, spin dynamics, surface phenomena, superconductivity, rare earth nickel borocarbides (exhibiting simultaneous magnetism and superconductivity), and in a host of other areas.

It is the mission of the Environmental and Protection Sciences Program to exploit expertise and developing science for the application of analytical science to problems in environmental characterization and monitoring, nonproliferation of weapons of mass destruction, homeland security, and forensic science.

The Materials Chemistry and Bio-molecular Materials Program works to extend the basic scientific knowledge of materials, with efforts to discover new, complex materials and developing an understanding of the factors that stabilize those materials.

An overarching theme of the research conducted within the Materials and Engineering Physics Program is to advance fundamental understanding of the complex linkages between the synthesis, structure, properties and performance of novel and advanced materials. Ultimately, the materials research in the Materials and Engineering Physics Program seeks to establish new tools and paradigms that enable the development of novel materials and structures with desired properties for improved performance, life span, and maintainability.

A recently established program, Multiphase Systems' goal is to advance the understanding of three-dimensional gas-solid reacting flows using basic theory and modeling. Initially, the Program focused on implementing synergically, two different computational fluid mechanics codes for multiphase flow taking advantage of Ames' Scalable Computing Laboratory.

Lastly, the Nondestructive Evaluation program at Ames Laboratory is at the forefront of research efforts to develop noninvasive measurement techniques for detecting and characterizing defects and mechanical properties of structural components.

In addition to the above scientific programs, the Materials Preparation Center (MPC) is a DOE Office of Science User Facility. They are recognized throughout the international research community for its unique capabilities in the preparation, purification, and characterization of rare earth, alkaline earth, and refractory metal materials for preparing ultra high-purity and well-characterized metals, alloys, compounds, and single crystals. The MPC continues to make these

materials available to DOE Laboratories, other federal agencies, universities, and the private sector.

Resources throughout the Laboratory are allocated to maximize the overall mission effectiveness. This philosophy is applied across all departments and functions not just with respect to infrastructure maintenance and improvement. Maintenance and improvement expenditures are reviewed and approved on a project specific level based on the effect each project or activity has on the mission. The Laboratory has designated its assets as "Mission Critical", "Mission Dependent, Not Critical", and "Not Mission Dependent" (See Table 1). Those facilities and assets that have a direct effect on the research activity are designated "Mission Critical". Those that have an indirect but significant effect are designated "Mission Dependent, Not Critical". Those that have a minor or no effect on the research activities are designated "Not Mission Dependent". With the small size of the facility, decisions on the allocation of resources are not made on the basis of the designation of the assets but rather by looking at the results of the activity on a case by case basis. Focusing on the results more than the inputs is in keeping with the principles of good performance-based measurements.

4.0 Land Use Plans

The Laboratory supports the Department of Energy policy to manage all of its land and facilities as valuable national resources and takes this stewardship seriously. The land on which the Government-owned buildings sit is under long-term lease to the Federal Government from Iowa State University and is located wholly on the campus of the University (See Figure 1). There is no federally-owned real estate at the Ames Laboratory. There is no undeveloped area within the lease line or adjacent to the leases (See Figure 2). The area is developed with buildings, sidewalks, drives, parking, railroad right-of-way, and landscaping. The lease line has been adjusted over the years to accommodate the facility needs of the Laboratory, and the University is willing to adjust the lease as needed to accommodate new Laboratory facilities in the future. According to the Master Plan for the University, the area of campus near the Ames Laboratory is being reserved for major research facilities. Because of this unique partnership, the Laboratory and the University work together regarding site development issues around the lease area of the Laboratory. The Laboratory's interests in the University's overall site-planning considerations are represented by the interactions of Laboratory officers and senior staff members with the major University committees and bodies that are responsible for campus planning, physical facilities, long-range development, and space utilization. Also, the Ames Laboratory Chief Operations Officer, the Facilities Services Group (FSG) Manager and other FSG engineers meet with campus planning personnel from ISU's Facilities Planning and Management (FP&M) on a periodic basis. These meetings are used to discuss the status of the Campus Master Plan, facility and utility developments on campus, and provide for the real estate needs of the Laboratory. Laboratory executive management is briefed on significant developments by the Chief Operations Officer who is a member of the Executive Council.

Responsible stewardship also addresses other land and facility use issues. There is no historic preservation or cultural asset issues at the site. National Environmental Policy Act (NEPA) evaluations are submitted and approval received on all capital improvement projects at the Laboratory prior to construction. Landscaping and grounds maintenance is the responsibility of

the University not the Laboratory. Plantings are selected and ground maintenance is accomplished without using irrigation other than for establishing new plantings. Assets will be managed to serve the ongoing research mission of the Laboratory into the foreseeable future. No reuse of the site for other purposes is projected for the duration of this plan.

Prior documentation specifically related to land use was the Site Development Plan, 1996. There were no subsequent calls for updating the Site Development Plan. Applying a tailored approach to the local site conditions, this section of the Ten Year Site Plan will now serve as the Land Use Plan of the Laboratory.

5.0 Facilities and Infrastructure (F&I)

5.01 Strategic F&I Goals/Issues

The Ames Laboratory will be an effective steward of the DOE assets entrusted to the Laboratory. The real property assets must be managed to support the infrastructure needs of the ongoing mission of the Laboratory. The Laboratory will manage the assets with a long-term view which is quality driven, takes into account the life cycle of the assets, utilizes best industry practice and is commensurate with the value and importance of the asset. The management of real property assets will take a corporate, holistic, and performance-based approach to real property life-cycle asset management that links real property asset planning, programming, budgeting, and evaluation to program mission projections and performance outcomes. This requires that resources applied to facilities and infrastructure must be evaluated and set in the context of the overall needs and operation of the Laboratory to carry out its mission.

Ames Laboratory facilities will be safe, secure, and environmentally responsible. The facility will be managed to maximize effectiveness and efficiency, building on the strengths of the unique partnership with ISU so that the Ames Laboratory will continue to be the most cost-effective Laboratory in DOE. The Laboratory is committed to a long-term perspective toward maintaining the facilities, thus avoiding decisions with short-term benefits that have long-term consequences. The facility will be maintained in excellent to outstanding condition as described by the Facility Condition Index. Infrastructure improvements will be done to keep pace with advancing technology and new paradigms of scientific collaboration so the research efforts are not restricted. The facility and facility management activities must be flexible and adaptable to enable research programs to respond efficiently to new developments and changing priorities in the increasingly dynamic research environment.

As a single purpose laboratory under the Office of Science, the Laboratory operates under a single “landlord.” All facilities are managed centrally. With a small site, Laboratory Management is actively involved in Facilities and Infrastructure issues at a very detailed level. There are no cross-program issues.

In developing this plan the following assumptions were used:

- The existing research activities as organized in the nine research programs within the Laboratory (See Section 2) will continue on a stable funding path with adjustment for

inflation or modestly above inflation. This is based on the fact that our core competencies continue to be vital to the DOE.

- In keeping with the vision of the Laboratory, the Laboratory will continue to extend its capabilities in a variety of new directions where it has a competitive advantage. New program initiatives in metabolomics (energy-related plant sciences), biochemical characterization, bio-renewable resources, and forensic science instrumentation and applications will be critically important paths for the Laboratory's continuing success in meeting the DOE's missions and goals. Existing facilities will be utilized as these new initiatives are developed. As these initiatives grow, the increased funding will help support the related facility and infrastructure needs.
- Ames Laboratory has proposed to DOE that a major national facility for plant metabolomics be built as part of the Laboratory on the campus of Iowa State University, the Laboratory's Contractor. This major construction project is included in this plan.

Key facility and infrastructure issues for the Laboratory include:

- Providing adequate space for new initiatives and flexibility to accommodate changes in existing research programs. The Asset Utilization Index for the Laboratory is currently 0.991 meaning that only 1% of the net usable space is unassigned.
- Balancing the priorities of all facets of Laboratory operations in budgeting for facility and infrastructure activities in a way that best supports the research mission on a long-term basis and also addresses the DOE corporate guidelines. Laboratory upper management takes an active and detailed role in balancing the priorities of all facets of Laboratory operations in budgeting for maintenance activities. The priority of each overhead-funded maintenance project is evaluated with respect to other activities and its impact to the overall mission of the Laboratory. Resources are applied so that infrastructure meets the needs of the research efforts and building occupants. The Maintenance Investment Index (MII) resulting from this process is currently in the 1.5-1.6% range. At this level of spending, deferred maintenance is not increasing and, in fact, decreased 10% in FY04, further explained in Section 5.03 Condition Overview.

5.02 Condition Assessment Process

The Laboratory maintains real property assets in a manner that promotes operational safety, worker health, environmental compliance, property preservation and cost-effectiveness while meeting the program missions. The maintenance management program includes a Condition Assessment Survey (CAS) of the real property assets.

The condition and needs of the facility are well understood by the Facilities Services Group (FSG) and Laboratory Management. Because the site is small, the in-house workforces are long-term employees, and, in many cases, systems are installed and maintained by the same workforce. The FSG crafts and engineering personnel have excellent knowledge of the conditions and infrastructure needs of the entire site. Individual elements of the facility are inspected periodically; i.e., weekly, quarterly, annually, etc., as part of the preventive maintenance program.

This knowledge provides a strong foundation for the systematic, comprehensive process of Condition Assessment Surveys. CAS is done on each building on a three-year cycle. Approximately one third of the space is surveyed each year. In-house personnel do most of the inspection work. Outside consultants are retained as needed to do supplementary inspections of specific systems or types of equipment on a site-wide basis. Consultants have been utilized for elevators, fire safety systems, and electrical systems. The condition assessment survey process is organized around four main building segments. These segments are areas, systems, infrastructure and exterior. Area inspections include all spaces used in accomplishing the Ames Laboratory mission or areas used to support the mission. Examples of these spaces are offices, research space, mechanical/utility and custodial space, and common or public use space. Inspection of these spaces includes examination of all finish surfaces; all utilities within the area including lighting, plumbing, piping, etc.; doors; hardware; HVAC and all permanent furniture; e.g., lab furniture within each area. Utility chases both within work areas and in common areas are included in the area inspection. System inspections include all utilities distributed within the building from the building entrance to the work area entrance. Infrastructure inspections examine the structural aspects of the building. Exterior inspections assess the condition of the exterior skin of the building including the immediate grounds outside the building such as steps, areaways and shipping docks.

A team approach is utilized to perform the inspections. The personnel selected for the inspection team is matched to the evaluated asset. The inspection team for area inspections generally includes an electrician, a craft worker experienced in mechanical systems such as plumbing and environmental systems, a locksmith, and a craft worker experienced in general construction. Results are recorded on inspections sheets, with information on component, location, description of deficiency, corrective action required and estimated cost. System inspections utilize experienced craftspeople or shop managers associated with the inspected system. For example, the shop manager or an experienced facility mechanic inspects HVAC systems with help from an electrician for the electrical supply and control components. Construction personnel inspect infrastructure components and building exteriors, again with help from electricians for such things as exterior lighting and lightning protection. This team approach and the knowledge and experience of the team members ensure a thorough and accurate inspection providing a great deal of detailed information.

All recorded deficiencies are classified into six ratings categories, ESH&A Critical, ESH&A Affected, Mission Critical, Mission Affected, Cost Preventative, and Aesthetics. ESH&A Critical designates a deficiency that creates a serious or potentially serious safety or health problem that should be corrected immediately. ESH&A Affected covers deficiencies that could create a serious or potentially serious safety or health problem that should be corrected in a reasonable time frame. Mission Critical pertains to deficiencies that seriously curtail research or operations. Mission Affected deals with items that hamper or encumber research or operations. Cost Preventative is a corrective action that is used to designate older features that are not cost effective when compared to currently available components. Aesthetics are corrective actions used to create a more pleasing surrounding. All six ratings are included in the CAS inspections and surveys, but the Cost Preventative and Aesthetic items are not considered deferred maintenance items.

The three-year reinspection of all buildings also includes a thorough review of the previous inspection data to insure that any deferred maintenance items that have been corrected within that three-year period are closed in the database. Many maintenance items cited in the inspections may be corrected as part of upgrade or program remodel projects. Because of this, renovation projects are reviewed upon completion and "matched" with previously identified maintenance items within their scope of work. These items are then closed within the deferred maintenance database.

In addition to the exhaustive inspection process, all identified maintenance items that have an estimated cost of $8,000 or greater are subject to a validation review. The validation process is designed to address several aspects of the inspection procedure. First, validation is used to verify that the deficiencies reported can be considered deferred maintenance items. An example of a deficiency that would not be a deferred maintenance issue would be the lack of adequate utilities in a given area for a specific program function. While this could potentially affect the mission of the Laboratory and should be corrected, it is not a deferred maintenance issue. Second, once the deficiency has been properly identified, the validation review confirms that the proposed corrective action is the best solution available. This confirmation may include a comparison of the proposed corrective action with other suitable solutions. The comparison would evaluate the costs, suitability, and value of several possible actions, implementing the best one. Third, validation re-estimates the cost of the corrective action. A more detailed estimating criteria would not only include the basic labor and material estimates of all deferred maintenance items, but may also include cost comparisons of individual material items and possible vendor or subcontractor estimates. It may also compare the feasibility of using outside contractors as opposed to in house labor. Fourth, alternative long-range solutions are investigated during this process. This investigation can determine whether a direct replacement or repair is the most beneficial to the vision and continued usability of the Lab. The possibilities of modification or possible elimination of the items inspected may be addressed at this point. This step, if implemented, would revert the process back to step one until arriving at a feasible solution and the associated estimated cost is calculated.

Also, to more accurately reflect actual deferred maintenance costs, a 7% engineering contingency is added to all items estimated at $8,000 or greater. The costs of project design, management and support are absorbed in this contingency.

5.03 Condition Overview

The consistent level of maintenance of the Ames Laboratory facilities is reflected in the overall quality condition of the structures and facilities. The facility conditions rate from "adequate" to "excellent" according to the FIMS rating scale. None of the Laboratory facilities were considered "fair" or "failing." The only structures receiving an "adequate" rating were two of the smaller support buildings, the Maintenance Shop Building and the Mechanical Maintenance Building. Because of the size and value of these buildings, the deferred maintenance of these two building make up only a small portion of the whole picture, and does not in any way hamper the use of the buildings or vision of the Laboratory.

The core research buildings, Wilhelm Hall, Spedding Hall, and Metals Development, rated extremely high in the FIMS rating. Both Wilhelm and Spedding were in excellent condition while Metals Development was in good condition. It is anticipated that, because of upgrade renovations underway and re-inspection in FY05, Metals Development will join the other research buildings in the excellent category. The maintenance of these core buildings remains the key element of continued high condition levels.

The high standard of facility condition is reiterated in all of the remaining structures and facilities. All facilities consistently have high ACI values (see Table 2) and are maintained to admirably high condition levels.

As shown in Figure 6 and in Table 3 the deferred maintenance and Facility Condition Index continue to improve. A significant decrease in deferred maintenance occurred between FY2003 and FY2004 from a combination of factors. A significant amount of deferred maintenance was eliminated through capital improvement projects, with the most significant associated with the Spedding Elevator Upgrade. There were changes in operations that allowed the disposition of infrastructure components that were no longer needed thus eliminating the deferred maintenance associated with those components. There were also significant overhead funded projects that eliminated deferred maintenance.

The projected Facility Condition Index is based on the following methodology. The Laboratory has been able to complete items of deferred maintenance at the current level of effort. When these reductions are balanced against new deficiencies identified in the CAS process, there is still a modest net reduction in the deferred maintenance backlog. It is assumed that this will continue under our core maintenance funding. The projections apply this reduction to the backlog and then escalate the dollar value into the next year using budget escalation values. The proposed DMR funding is then targeted to deferred maintenance reduction projects currently on the backlog into FY10. By FY10 it is anticipated that some additional deficiencies will be identified on the deferred maintenance backlog that will be a priority for DMR funding. The specific deferred maintenance values are shown in Appendix 1 and the specific projects for DMR funding are shown in Section 6.0

It should be noted that these high ratings were attained despite a rigorous and thorough inspection process designed to identify and log all deficiencies whether they are large or small, or whether they have extensive or minimal impact on Laboratory operations. In September 2004, Max Rosenquist, Chicago Office matrix support staff to the Ames Site Office, performed a site visit to gain operational awareness of the Condition Assessment Surveys and Deferred Maintenance Reporting. Rosenquist states in the Operational Surveillance Log report that, “The list of deficiencies was validated as being very complete, including many minor deficiencies that probably would be ignored at other sites.” This observation of the inspection system provides additional confidence in the integrity of the condition ratings given the Laboratory facilities. However the Surveillance Log report also states, “Additional expertise would be needed to validate the majority of the deficiencies which are associated with ‘Systems.’” Utilizing the services of a facility inspection contractor should be considered.” It was also noted in the report that the vast majority of listed deficiencies are of relatively low priority. Most items listed are considered low risk and low impact. These items present minimal safety risk and do not hamper the purpose of the Laboratory operations.

The Operational Surveillance done by Max Rosenquist provides an initial level of validation of the deferred maintenance identified by the Condition Assessment Survey process. The Laboratory is pursuing an independent validation using an inspection consultant in keeping with the comments from the Operational Surveillance Log. The plan is to have an inspection consultant with experience at DOE facilities perform an inspection on one of the Laboratory buildings and compare the results to the existing CAS inspection. Laboratory personnel involved with the CAS program will participate with the consultants as an additional training opportunity and "calibrate" our inspection process to independent standards. This will be completed in FY05 or FY06.

Table 2. Summary Condition Table

Asset	Deferred Maintenance Cost (DM) ($)	Replacement Plant Value (RPV) ($000)	Facilities Condition Index (FCI)	Asset Condition Index (ACI)	Rehab & Improvement Cost (RIC) ($000)	Total Rehab & Improvement Cost (TRIC) ($000)	Total Summary Condition Index (TSCI)	FIMS Rating
Buildings								
Campus Warehouse	11,592	1,054.8	1.10%	0.99	0	11.6	1.10%	Excellent
Construction Storage Shed	3,490	81.3	4.30%	0.96	0	3.5	4.30%	Good
Maintenance Shops Building	35,356	691.4	5.11%	0.95	115	150.4	21.75%	Adequate
Mechanical Maintenance Building	43,350	587.9	7.37%	0.93	0	43.4	7.37%	Adequate
Metals Development Building	457,133	10,144.5	4.51%	0.95	1,585	2,042.1	20.13%	Good
Paint and Air Conditioning Building	27,048	650.9	4.16%	0.96	0	27.0	4.16%	Good
Records Storage Facility	2,197	229.3	0.96%	0.99	0	2.2	0.96%	Excellent
Shed 1	0	17.8	0.00%	1.00	0	0.0	0.00%	Excellent
Shed 2	0	23.5	0.00%	1.00	0	0.0	0.00%	Excellent
Spedding Hall	546,624	19,426.8	2.81%	0.97	3,485	4,031.6	20.75%	Good
Technical and Administrative Service Facility	7,753	6,431.9	0.12%	1.00	100	107.8	1.68%	Excellent
Wilhelm Hall	248,347	12,965.1	1.92%	.98	1,628	1,876.3	14.47%	Excellent
OSF								
Parking Areas	0	508.2	0.00%	1.00	0	0.0	0.00%	Excellent
Power Switch Pit	0	174.5	0.00%	1.00	0	0.0	0.00%	Excellent
Totals	1,382,890	52,987.9	2.61%	0.97	6,913	8,295.9	15.66%	Good

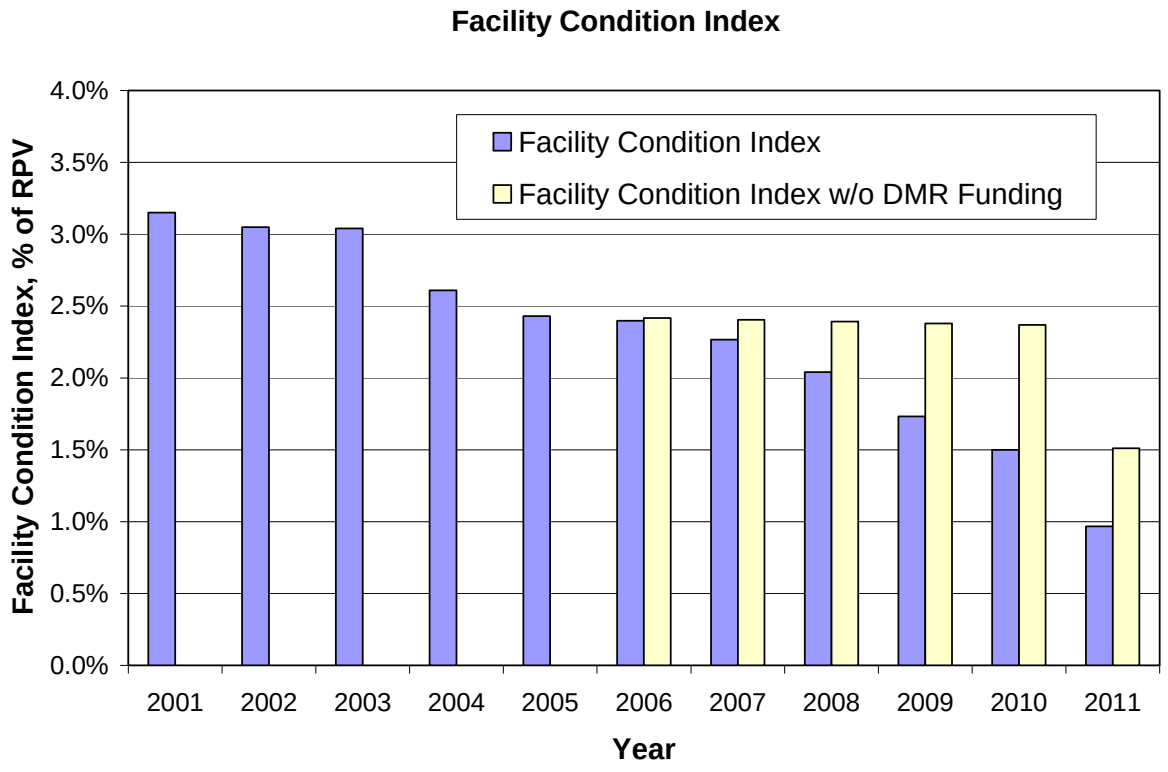


Figure 6. Facility Condition Index

5.04 Facilities Management, Space Management & Utilization

Facilities Management, Space Management and Utilization is managed centrally rather than distributed. The Executive Laboratory Management is the center of these responsibilities with support from the Facilities Services Group and the Office of Industrial Outreach & Technology Administration. The Deputy Director is responsible for making space assignments. Space is assigned on a room by room basis to one of the nine research programs in the Science and Technology Division or to one of the administrative departments. Research Program Directors and administrative Department Managers have responsibility over the space assigned to them regarding its use within their organization; e.g., specific office or lab assignments and room access (keying). Space vacated due to changes in research or operations reverts back to an unassigned status for reassignment by the Deputy Director. The Deputy Director may also reassign and redistribute space from one program or department to another based on changing programmatic or operational needs. Laboratory Executive Management is well informed on the research and operations activities and the associated space needs and assignments. Members of the Executive Council participate in the annual safety walk-through that inspects every space in all of the buildings each year. They review resource needs of each program area and department through the annual budget review and approval process. The Deputy Director personally reviews the areas involved with space assignments and deals directly with the stakeholders.

The Office of Industrial Outreach & Technology Administration provides support for space management activities through the management of the Space Utilization Agreement with the University. As mentioned earlier, many of our researchers share joint appointments between the Laboratory and the University. Because of these joint appointments, shared space is tracked room by room (both University occupied Ames Laboratory space and that utilized by the Laboratory in University buildings), based upon the percent of use and time (number of months) of use for determining the net use of shared space between the Laboratory and University. The Office has developed and currently maintains a space database and is in the process of expanding its capabilities to incorporate information needed to be tracked by room or building by administrators in Environment, Safety and Health, Facilities Services and Information Systems. The Facilities Services Group maintains updated floor plans of all facilities. The Office of Industrial Outreach & Technology Administration also manages the Facility Information Management Database (FIMS) which is the "corporate" database for real property data within DOE. The Office is responsible for participating in various FIMS teleconferences and training conferences, and for populating, maintaining and auditing the FIMS database. Data is provided by the appropriate source departments; e.g., Facilities Services Group and Accounting.

The Laboratory does not have a space charge system in place. Space is assigned and unassigned on a need basis as described above. All maintenance, utilities, custodial, and other services associated with space are funded from indirect overhead funds.

The Asset Utilization Index is calculated on a net usable basis. It can be calculated on a building by building basis or rolled up to a site-wide number. Since net usable space is assigned on a room by room basis, the net assigned space is divided by the total net usable space to determine the Asset Utilization Index in each building. The net areas from each building are then rolled up to calculate the site-wide number. The current Asset Utilization Index for the site is 0.991.

5.05 Facilities Supporting Mission Activities

The Laboratory operates under a single executive management structure to carry out the mission as described in Section 2. There are no separate laboratory "directorates" based on program support, facilities assigned, location or any other designation. All of the facilities are managed centrally. The Laboratory Executive Management has the responsibility to fund, operate and manage all of the Laboratory facilities to accomplish the DOE program mission activities of the nine research programs in the Science and Technology Division with the assistance of the administrative departments. This responsibility extends from the Laboratory Executive Management through the Ames Site Office to the Office of Science, in particular, the Lead Program Secretarial Officer.

5.06 Site Utility Systems

The Laboratory has no general site-wide utilities or distribution network. Electricity is purchased from the City of Ames Municipal Electric Utility and is supplied to the buildings through underground feeders from the adjacent city-owned substation. Alliant Energy supplies natural gas to meters at the buildings.

The integration of the Ames Laboratory site with the University campus enables the Laboratory to utilize the utility infrastructure of the campus. The University provides potable water and sewer, ordinary waste disposal, natural gas to the research buildings, streets, most of the parking, street lighting, traffic control, compressed air, telecommunications, steam and chilled water. Some of these are provided through contract overhead fees and some are purchased on a direct-charge basis. The Laboratory avoids the capital investment, management, maintenance, operating expense and recapitalization that these systems require. Of particular benefit is the fact that the Laboratory does not require large chillers or boiler plants, items that have high maintenance demands. In effect, it is a form of third party financing as the University funds the infrastructure that serves the Laboratory and the campus. For example, the University just completed construction of a $13 million chiller plant to serve the north part of campus where the Laboratory facilities are located.

5.07 Leasing

The Laboratory currently has no leased facilities and there are no plans to lease any facilities in the foreseeable future.

5.08 Disposition

All of the Laboratory facilities on the University's central campus are operating facilities and will continue in that status throughout the duration of this plan. There are no facilities on the site that are managed by EM. The Laboratory has contractual responsibility for two buildings located at the University's Applied Sciences Complex located approximately 1.5 miles northwest of the Ames Laboratory facility and the University central campus. The site was the location of the Ames Laboratory Research Reactor and associated support buildings built in the early 1960's by the Atomic Energy Commission, a DOE predecessor. Like the campus site, the reactor was on land under long-term lease from the University. The research reactor site was operated by the Laboratory during the 1960's and 70's. After shutdown of reactor operation, the reactor site was decommissioned and the real property was transferred to the University. As part of this transfer agreement, the Laboratory retained the use of and responsibility for two buildings, the Waste Handling Facility and the Hydrogen Test Cell Facility through a beneficial use agreement. They are not listed in the Facility Information Management System. The buildings are no longer needed to support program missions and the Laboratory is working toward the disposition of the assets.

The Waste Handling Facility was built, as part of the research reactor complex, to take care of waste from the reactor operations. The building is a 9,000 square foot, pre-engineered metal frame and skin building with a partial basement. After decommissioning of the reactor, the building was used by the Laboratory for staging low-level radioactive waste from the campus site Laboratory operations. A portion of the building was used for various research activities utilizing radioactive materials that have since been discontinued. It was decided to pursue moving low-level waste handling activities into an existing Laboratory building on the main campus site eliminating the need to transport these materials to the remote site thereby reducing

the risk of an accident on public roads and improving the efficiencies of the operation. Because of the condition of the building and the potential for legacy contamination issues, it was determined that the best disposition option was demolition. Capital improvement funds were used to convert an area in the Mechanical Maintenance Building for handling the low-level radioactive waste operations. Facilities Disposition funds were received in FY04 to begin the Closeout and Demolition of the Waste Handling Facility. The balance of the project will be completed with FY05 funding. The project will be completed in FY05.

The Hydrogen Test Cell Facility is a specialized 900 square foot facility built in 1977 to perform materials research using hydrogen atmospheres at high temperatures and high pressures. It is located adjacent to the Waste Handling Facility. It was built with small cells (rooms) with armored walls and explosion relief panels to house the high temperature/high pressure hydrogen pressure vessels. Support spaces were constructed using standard concrete block. Because of the safety considerations, it was located in an open area at the Research Reactor Site (now the Applied Sciences Complex). Upon decommissioning of the reactor and transfer of the real property to ISU, Ames Laboratory continued to utilize the building for research activities through the beneficial-use agreement that requires the Laboratory to pay the operating costs, maintain the facility, and retain responsibility for disposition. The use of the facility decreased as research priorities shifted. The facility was retained for periodic and occasional use and as a facility that could be modified for unspecified future use. The periodic use of the facility ended and, since the specialized nature of the facility precluded its re-use for other activities, it was completely deactivated. Surveillance and maintenance activities decreased in conjunction with the changing status of the facility. No environmental impact or hazardous material issues have been identified that require specific surveillance or maintenance plans. Therefore, the tailored approach justifies minimal surveillance and maintenance activities in the facility until disposition. Cost to restore the building to useful condition, if a viable use were identified, has been estimated at twice the cost of demolition, and Iowa State University's preference is demolition of the facility and restoration of the site. The Laboratory is pursuing disposition of this facility by demolition. Disposition of this facility would discharge DOE responsibilities for the beneficial occupancy facilities at the Applied Sciences Complex.

The project to demolish the Hydrogen Test Cell Facility is estimated at $45K in FY05. The project was submitted for funding under the Future Liabilities Program. Funding the project in FY05 would allow the demolition of this building in conjunction with the demolition of the adjacent Waste Handling Facility. This will decrease the overall cost by avoiding duplication of project management, contractor mobilization/demobilization and site restoration activities.

5.09 Value Engineering

The Laboratory, as a matter of policy and practice, approaches real property management from a long-term, life-cycle cost viewpoint. A value engineering assessment is required for real property asset projects where the total value for a single item of purchase or contract is expected to be greater than $5 million. The Laboratory has no projects in process that meets this criterion. External consultants will be utilized for the Ames Plant Metabolomics Resource Facility if funding is secured for the project. For smaller projects, value-engineering principles are utilized informally in a tailored manner to reduce DOE's real property asset ownership costs (e.g.,

acquisition, operations, maintenance, and disposal) while maintaining the necessary level of performance and safety.

5.10 Facility Designations

All of the facilities of the Laboratory are owned and managed under the Office of Science. There are no facilities managed by EM or designated with landlords other than SC. All of the facilities are general-purpose conventional facilities. There are no program specific facilities such as an accelerator beam line. The FIMS Conventional Facilities Indicator equals one for the entire site. There are no facilities that fall under the DOE Order 433.1, Maintenance Program for Nuclear Facilities.

Mission essential facilities as currently defined in FIMS are those assets that are currently used in support of mission accomplishment. All facilities where the FIMS Building Status is "Operating" and is projected to continue in that status for the duration of this plan are designated Mission Essential. Therefore, all of the assets listed in Table 1 are designated Mission Essential under the old FIMS field. This designation, as a binary indicator, does not provide sufficient distinction to determine resource allocation on a facility-to-facility basis. The new field in FIMS provides greater granularity with designations of "Mission Critical", "Mission Dependent, Not Critical" and "Not Mission Dependent." See Section 3.0 and Table 2 for more detail. Even with this designation for FIMS assets, individual projects and functions are still evaluated in the context of the overall Laboratory operation with respect to their impact on the overall mission along with their impact on codes and regulations, public safety, worker safety, and environmental stewardship. Laboratory executive management takes an active role providing oversight and direction in balancing these priorities.

5.11 Five-Year Sustainment Requirements

Sustainment consists of maintenance and repair activities necessary to keep the inventory of facilities in good working order. It includes regularly scheduled maintenance, corrective repairs and periodic replacement of components over the service life of the facility. The facility management, engineering, documentation and oversight required to carry out these functions are also included. The service lives of all Ames Laboratory facilities are expected to be extended for the duration of this plan and beyond. The projected five-year sustainment needs, as well as values for recent years are listed in Table 3. All values are in escalated dollars using budget office escalation values and Whitestone construction escalation values. Whitestone construction escalation values are based on actual construction cost data and are used to update plant replacement values to present values. Plant replacement values are projected into the future using the DOE provided escalation rates for the construction category. The current deferred and actual maintenance values are based on current in-house labor rates. Future maintenance budgets and deferred maintenance are projected using escalation factors developed by the Ames Laboratory Budget Office. These factors use the DOE escalation numbers for material costs, but use local rates for labor escalation based on the State of Iowa's negotiated contractual agreement for the non-exempt employees of Ames Laboratory. As a result, the overall escalation rates for

maintenance expenditures and deferred maintenance are higher than DOE escalation rate assumptions.

Table 3. Sustainment Plan

Fiscal Year	RPV for MII Calculation ($000)	Maintenance Investment ($000)	MII	DMR Funding ($000)	FCI
2001	49,996.3	567.4	1.13%		3.15%
2002	50,346.1	622.9	1.24%		3.05%
2003	51,655.2	771.4	1.49%		3.04%
2004	52,946.6	831.7	1.57%		2.61%
2005	52,987.9	897.0	1.69%		2.43%
2006	52,987.9	943.0	1.78%	11.0	2.40%
2007	57,182.4	858.0	1.50%	72.0	2.27%
2008	58,669.1	889.0	1.52%	133.0	2.04%
2009	60,194.5	935.0	1.55%	194.0	1.73%
2010	61,759.6	957.0	1.55%	255.0	1.50%
2011	100,865.3	1,368.0	1.36%	255.0	0.97%

Note that the five-year sustainment plan provides the resources to make significant reductions in the deferred maintenance and improve the Facility Condition Index to below 2%. The numbers shown in Table 3 are based on an escalated RPV. Per Office of Science guidance, the FY2004 RPV is used to generate the MII values for FY2004, FY2005 and FY2006. Subsequent years will be escalated by actual construction cost escalators and are projected into future years with escalation factors provided in budget guidance.

The increase in the MII for FY04, FY05, and FY06 represents the extra costs for purchasing and implementing Computerized Maintenance Management System software and hardware. As a result, the Laboratory meets the MII targets for those years. The MII decreases in subsequent years, but is still sufficient to continue improving the condition of the facility. The planned maintenance funding levels and MII percentages are based on the Laboratory's assessment of the facility condition as embodied in the values for deferred maintenance and FCI. If the condition of the facility is not validated through the inspection by an independent facilities inspection contractor as stated in Section 5.03, the planned funding levels will be reconsidered.

The large changes in FY11 reflect adding the line item construction project, the Ames Plant Metabolomics Resource Facility to the inventory. It would add an estimated $37.5 Million in replacement plant value. As a new facility, it would add no deferred maintenance and very little repair maintenance. The jump in maintenance investment is primarily for scheduled or preventive maintenance in the new building. As a result, both the site-wide Facility Condition Index and Maintenance Investment Index drop significantly.

Laboratory Executive Management takes an active and detailed role in balancing the priorities of all facets of Laboratory operations in setting budgets for maintenance activities. Facilities staff

prepares budget requests for the core functions and tasks for sustainment of the facilities and infrastructure. These core tasks are activities that are ongoing from year to year and are budgeted using historical data, knowledge of changing conditions or requirements and experience. Individual maintenance projects are defined and budgeted based on Condition Assessment (deferred maintenance) results, knowledge of facility needs, and input from Laboratory research and administrative staff. The priority of each overhead-funded maintenance project is evaluated with respect to other activities and its impact to the overall mission of the Laboratory. Resources are applied so that infrastructure meets the needs of the research efforts and building occupants. These funding levels are projected over the five-year time period utilizing the input from Laboratory Executive Management. Deferred maintenance results, first hand knowledge of the facilities, and feedback (both formal and informal) from Laboratory personnel provide additional checks on the adequacy of the sustainment levels.

5.12 Management of Deferred Maintenance

Deferred maintenance information is generated through the Condition Assessment Survey (CAS) activities and data is contained in the CAS database. A detailed description of this system is contained in Section 5.02. As discussed early, inspection findings are classified and prioritized under one of six categories:

- ESH&A Critical
- ESH&A Affected
- Mission Critical
- Mission Affected
- Cost Preventative
- Aesthetics

All items in the top four categories are deferred maintenance deficiencies and included in the deferred maintenance backlog regardless of size. Items that are simply cost preventative or a matter of aesthetics are not considered to be deferred maintenance deficiencies. These categories are used to focus resources on the higher priority deficiencies. The effectiveness of this was confirmed during a recent Operational Surveillance site visit by Max Rosenquist of the Chicago Operations Office to review Condition Assessment Surveys and Deferred Maintenance Reporting. The report states, “The Facilities Services Group considers the majority of the deficiencies to be relatively low priority. This assessment was validated by the reinspection.”

The CAS database was recently modified to add fields capturing the funding categories used to correct the deficiencies. This information will need to be entered manually in the same way completion dates are entered. This will allow annual reporting of deferred maintenance reduction by funding category. The current system does not automatically link detailed work orders to the CAS database. In the current process, there are redundant methods of closing the loop on completed deferred maintenance deficiencies. The deficiencies that are addressed directly through a specific repair ticket or job order are adjusted when the ticket is closed or the job order completed. Deficiencies may also be corrected as part of a larger project not specifically targeting the deferred maintenance. Because of the size of the site, the project planning, craft shop management, CAS inspection, and CAS database management all reside in the Facilities Services Group. Often, the operational awareness regarding the facilities and the deficiencies enables the staff to close out the deficiency. Another method of capturing corrected

deficiencies is an annual "desk review" by the staff doing the inspections as well as the projects. Staff will review a printed report of outstanding deficiencies and note those that have been corrected. The final method of capturing corrected deficiencies occurs when the facility is reinspected on a three-year cycle. Inspectors are provided with a report of outstanding deficiencies prior to reinspecting. The inspectors either validate that the deficiency is still outstanding or note that it has been corrected.

5.13 Recapitalization

Recapitalization projects are major renovations or reconstruction activities, including facility replacements, needed to keep existing facilities modern and relevant in an environment of changing standards and missions. It includes the restoration and modernization of existing facilities, but not the acquisition of new facilities. Recapitalization is funded primarily by GPP funds since the scale of the recapitalization projects fall below thresholds for line item funding. The last line item project of any type at the Laboratory was construction of the TASF building completed in 1995. That project provided a new facility for administrative services freeing up research space in existing laboratory buildings. Technically, even that project would not be considered recapitalization since it was not a facility replacement.

The recapitalization plan for the Laboratory is detailed in the Summary of Resource Needs, Section 6. Individual projects are shown out through FY2016. The level of capital reinvestment can be measured by the Capital Reinvestment Index defined as the capital funding divided by the replacement plant value (similar to the maintenance investment index). The capital reinvestment index for Ames Laboratory has been consistently around 1%.

5.14 Line Item Projects

Ames Plant Metabolomics Resource Facility

$37,500,000	Total Estimated Building Cost (Including design, site/utility extension, construction and project management) (Design cost $2,700)
$29,500,000	Analytical and computing equipment
$67,000,000	Total Estimated Cost

90,000 gsf Note: This is a new initiative and is not replacing existing space. At this point no offsetting space has been identified in the site space bank.

The Laboratory proposes to build a national facility for plant metabolomics. This facility will have state-of-the-art analytical instrumentation that will allow biologist to conduct genome-wide metabolite profiling. Furthermore, this facility will also become the source for the development of the next generation of instrumentation that will dramatically increase both the speed and sophistication of metabolomics experiments and will also be home to a team of experts in computational metabolomics. The proposed facility will include laboratories for visiting scientists and analytical methods development.

Combining the excellence in analytical chemistry, computational chemistry and virtual reality engineering in the Ames Laboratory with the rich tradition of plant science research at Iowa State University will make this facility the premier resource for plant metabolomics research. This facility will enable scientists across the nation to interact with leading scientists in chemistry, engineering and the biological sciences. Researchers will have access to state-of-the-art technologies for conducting high-throughput genome profiling experiments to functionally analyze genomes. Although some national labs and universities have similar instruments, no single facility has the combination of cutting-edge instrumentation development and the collection of analytical instrumentation and computing facilities that will be present at the Ames Laboratory facility.

5.15 Performance Indicators and Measures

Performance measures will be utilized to link performance of program goals and budgets to outputs and outcomes. Various performance measurements are formalized to track the performance in asset management. Efforts are made to utilize broad-based measures so a small number of results can provide a high level, integrated grasp of the stewardship of DOE assets at the Ames Laboratory. Measures and metrics are defined in O430.1B, Real Property Asset Management (RPAM) and in Appendix B of the operating contract. While there is some commonality in the measures, the metrics do not necessarily match. The measures and metrics associated with the Appendix B of the operating contract will be reported through the self-assessment report. The DOE corporate wide measures specific to RPAM, the Asset Condition Index and the Asset Utilization Index are reported directly through FIMS as well as being incorporated in the Laboratory Self-Assessment.

The Contracted Performance Measures have previously been measured by calendar year. This is being shifted to a fiscal year basis beginning in 2005. The FY2005 Contract Performance Measures are the same as CY2004; however, the performance expectations have been modified. The metric values for the Maintenance Investment Index have increased from CY2004.

Fiscal Year 2005 Contracted (Appendix B) Performance Measures

INFRASTRUCTURE – FACILITY MANAGEMENT:

OBJECTIVE 1.1: Fully populate the Facility Information Management System Maintenance (FIMS) and associated fields with accurate information for all real property assets at Ames.

MEASURE 1.1: Complete and accurate information is entered in the six maintenance and associated fields. The fields that will be measured are as follows: Deferred Maintenance; Annual Required Maintenance; Annual Actual Maintenance; Inspection Date (Maintenance); Replacement Plant Value; and Deficiency Systems (if applicable).

EXPECTATION 1.1: The Laboratory will populate and validate 100% of the fields identified above for all the real property assets (buildings and other structures) listed in FIMS.

$$\frac{\text{Total number validated fields}}{\text{Total number of required fields}} \times 100 = \%\ \text{Validated}$$

Performance Level	Metrics
Outstanding	100%
Excellent	95 - 99%
Good	90 – 94%
Marginal	85 – 89%
Unsatisfactory	< 85%

INFRASTRUCTURE – MAINTENANCE:

OBJECTIVE 1.1: Manage the Operation Expense (OE) funded Maintenance and Repair Back Log (MB) to maintain or improve the condition of real property assets (facilities) in an excellent or better condition.

MEASURE 1.1: The Facility Condition Index (FCI) for the fiscal year associated with the performance period.

EXPECTATION 1.1: The FCI, expressed as a percentage, is defined as the Total Needed OE funded Maintenance and Repair (M&R) Deficiencies (Deferred Maintenance) (at the end of the fiscal year associated with the performance period) divided by the Replacement Plant Value (RPV).

$$\text{FCI} = \frac{\text{Deferred Maintenance (\$)}}{\text{RPV (\$)}}$$

FCI Goal for CY2005	Metrics
Outstanding	< 2%
Excellent	2% - 4%
Good	>4% - 6%
Marginal	>6% - 10%
Unsatisfactory	> 10%

OBJECTIVE 1.2: Achieve an Operation Expense (OE) Annual Maintenance Investment Level to sustain and improve real property infrastructure.

MEASURE 1.2: The Maintenance Investment Index (MII) for the fiscal year associated with the performance period.

EXPECTATION 1.2: The MII, expressed as a percentage, is defined as the Actual OE funded Maintenance and Repair (M&R) Expenditures (at the end of the fiscal year associated with the performance period) divided by the Replacement Plant Value (RPV).

$$\text{MII} = \frac{\text{Actual Maintenance Expenditures (\$)}}{\text{RPV (\$)}}$$

Gradient	Metrics
Outstanding	> 1.8%
Excellent	1.8% - 1.7%
Good	< 1.7% - 1.6%
Marginal	< 1.6% - 1.5%
Unsatisfactory	< 1.5%

OBJECTIVE 1.3: Make continuous improvements in the productivity, service, efficiency and cost savings associated with the facility maintenance and facility engineering areas and activities, especially those areas and activities that are identified as having good potential for improvement.

MEASURE 1.3: Evaluation of improvements achieved during the performance period.

EXPECTATION 1.3: Identify all improvements achieved during the performance period and assign a point value to each improvement according to the following Table:

Value	Description of Improvement
5	$10,000 or more of one time or annual cost savings in the form of material or contract dollars that will not be spent by the facility maintenance organization or in the form of labor savings that will allow other work to be accomplished
4	$5,000 to $9,999 of cost savings
3	$2,500 to $4,999 of cost savings or very significant improvements with insignificant or no associated cost savings, for example, improvements in the services provided or the quality or timeliness of service provided
2	$500 to $2,499 of cost savings or significant improvements with insignificant cost savings
1	$499 or less cost savings or minor improvements

Continuous Improvement Goal for CY2004	
Outstanding	> 10
Excellent	7 – 9
Good	4 – 6
Marginal	2 – 3
Unsatisfactory	< 1

Fiscal Year 2005 Corporate Performance Measures Reported Through FIMS

(1) Asset Utilization Index (AUI). AUI is the Department's corporate measure of facilities and land holdings against requirements. The index reflects the outcome from real property acquisition and disposal policy, planning, and resource decisions. The index is the ratio of the area of operating facilities or land holdings justified through annual utilization surveys (numerator) to the area of all operational and excess facilities or land holdings without a

funded disposition plan (denominator). The AUI is derived from data in FIMS obtained from annual utilization surveys.

$$AUI = \frac{\text{Utilization Justified Assets}}{\text{Current Real Property Assets}}$$

Ratings are assigned to AUI range measures. The AUI improves as excess facilities are eliminated and consolidation increases the space utilization rate of the remaining facilities. AUI ranges and ratings are as follows.

AUI Range	AUI Rating
1.00 > 0.98	Excellent
0.98 > 0.95	Good
0.95 > 0.90	Adequate
0.90 > 0.75	Fair
0.75 >	Poor

(2) Asset Condition Index (ACI). ACI is the Department's corporate measure of the condition of its facility assets. The ACI reflects the outcomes of real property maintenance and recapitalization policy, planning, and resource decisions. The index is one (1) minus the Facility Condition Index (FCI). FCI is the ratio of Deferred Maintenance to Replacement Plant Value. The FCI is derived from data in FIMS.

ACI = 1 - FCI

Ratings are assigned to ACI range measures. The goal is for the ACI to approach one (1). The ACI increases and approaches one (1) as the condition of facilities improves at a site. ACI ranges and ratings are as follows.

ACI Range	ACI Rating
1.00 > 0.98	Excellent
0.98 > 0.95	Good
0.95 > 0.90	Adequate
0.90 > 0.75	Fair
0.75 >	Poor

The Laboratory will work with the Ames Site Office to implement meaningful real property asset performance measures over the ten-year planning period that is commensurate with Ames Laboratory’s duties and responsibilities. It is expected that the DOE Office of Science Lead Program Secretarial Officer (LPSO) will establish annual performance targets for the Office of Science real property assets and state their expected performance outputs and outcomes in their annual direction and guidance. The Ames Laboratory will work with the Ames Site Office to develop site-specific measures to assess the level to which the LPSO-established outputs and outcomes have been attained. Typically these measures will be incorporated into the operating contract.

5.16 FIMS

The Facilities Information Management System (FIMS) is the "corporate" database for real property data within DOE. The Office of Industrial Outreach & Technology Administration has the responsibility of populating, maintaining and auditing the FIMS database. The data is provided by the appropriate source departments; e.g., Facilities Services Group and Accounting. The database itself is defined and controlled at a corporate level. The Laboratory has a FIMS Quality Assurance Plan that meets the requirements of the FIMS Administrative Guide to ensure that FIMS is efficiently and effectively managed. New fields added to the FIMS database are populated promptly for all assets.

Recent reviews associated with the Laboratory Real Property Asset Management Plan identified two existing assets that will be added to the FIMS database. Two storage sheds built in the early 1990's from expensed funds rather than capitalized funds were not included in the FIMS inventory because of their funding source. The Realty Specialist at the Chicago Operations Office has provided guidance on adding the assets to the FIMS database without affecting the capitalization data. The assets will be entered into FIMS as soon as all the information is gathered to populate the required data fields. These two assets are incorporated in this Ten Year Site Plan and will be included in all FY05 FIMS reports.

Replacement Plant Values are contractor generated using a current plant value method. The values are updated each year in September. They are adjusted for capital improvements that change the current plant value basis such as building additions. They are also escalated using escalation factors based on Whitestone Research Construction Index Data provided by the DOE Chicago Office. These factors are based on the most recent year of actual construction cost escalation. The increase in RPV from FY2003 to FY2004 was 2.5% due solely to the annual escalation. The escalation has averaged 2.5% per year over the past 20 years, but is expected to be 8% for FY2004 to FY2005.

5.17 Process for Development of the Ten Year Site Plan

The process for development of the Ten Year Site Plan is a reflection and expression of the overall planning process for the infrastructure needs of the Laboratory as described in the Ames Laboratory Real Property Asset Management Plan. The planning process has the following broad objectives.

- Assess the current real property assets with respect to program mission needs and projections.
- Identify the specific real property asset projects and activities required to meet the program mission requirements.

Projects are defined based on Condition Assessment Survey (CAS) results, FSG personnel's knowledge of the facility, input from program directors, input from the Laboratory Executive Management and input from other occupants. The Institutional Plan lays out the long-term goals and strategic plans of the Laboratory. Laboratory personnel have regular interaction with facility and planning staff of the University to coordinate the plans and changes on the broader University campus that may affect the Laboratory. Input from the broader Laboratory

community occurs through both formal and informal processes. Informal input is very effective given the size and nature of the Laboratory. Facility management and needs assessment are not compartmentalized in separate facilities or organizational units. Personnel within the scientific programs, support departments and Executive Council interact extensively with the Facilities Services Group. Facility needs are routinely communicated among these groups and individuals within the groups. A formal process also exists to ensure the opportunity for input and communication. A call for input for the Environment, Safety, Health and Infrastructure (ESH&I) Management Plan is sent annually to Laboratory Directors and Program Directors. Program Directors meet with the FSG Manager to review and discuss infrastructure needs and priorities. That input is incorporated into existing plans and reviewed with the Executive Council for inclusion in the Ten Year Site Plan and the Field Budget Request process. Activity Data Sheets are developed for each capital improvement project. A scoring committee uses the Risk-Based Priority Model to score projects based on six categories—Public Safety and Health, Site Personnel Safety and Health, Compliance, Mission Impact, Cost Effective Risk Management and Environmental Protection. The scores and priorities are reviewed and adjusted by Laboratory Executive Management in accordance with budgetary constraints, resource limitations, external stakeholder issues, strategic goals and other considerations. The results of this planning are then captured in the Ten Year Site Plan. Individual sections were drafted by the subject matter experts and reviewed by the appropriate stakeholders.

The Laboratory Executive Management has approved the Ten Year Site Plan as a roadmap for meeting the infrastructure needs of the Laboratory enabling it to best carry out its research mission in helping to achieve the Department of Energy’s Missions and Goals.

6.0 Summary of Resource Needs

FY2007 - FY2016 Ten Year Site Plan Integrated Facilities and Infrastructure Budget Data Sheet (IFI)	Project Number	Gross Building Area	FY2004 Approp. ($000)	FY2005 Approp. ($000)	FY2006 Target Budget ($000)	FY2007 Target Budget ($000)	FY2008 Target Budget ($000)	FY2009 Target Budget ($000)	FY2010 Target Budget ($000)	FY2011 Target Budget ($000)	FY2012 Target Budget ($000)	FY2013 Target Budget ($000)	FY2014 Target Budget ($000)	FY2015 Target Budget ($000)	FY2016 Target Budget ($000)
SITE NAME: Ames Laboratory															
PROGRAM: Office of Science (BES)															
1.0 Capital Line Item (Include project number & identify Funding Program)															
1.1 New Construction (facilities and additions)															
Ames Plant Metabolomics Resource Facility	L0001	90,000					67,000								
1.2 All Other Projects (recap)															
Subtotal Line Item Projects		90,000	0		0	0	67,000	0	0	0					
2.0 General Plant Project (GPP) (Include project number & identify Funding Program)															
2.1 New Construction (facilities and additions)															
2.2 All Other Projects (All projects KC-03 GPP)															
Spedding Elevator Upgrade	J85189		120												
Upgrade Direct Digital Control System	J85192		90												
Remodeling for Low Level Waste Handling Operations	J85191		100												
Upgrade Exhaust Stacks/Blowers, Spedding Hall	J85193		205												
Convert Lab Space to Comp. Room, Wilhelm Hall	P0013			552											
Upgrade HVAC, Front Section, M. D.Bldg	P0004				360										
Upgrade HVAC System, Spedding Hall	P0005				220	580	580	500							
Record Storage Facility	P0007								180						
Upgrade Harley Wilhelm Hall Exit Doors	P0008							40							
Handicapped Access, All Buildings	P0009								170	50					
Systematic Space Modernization	P0014									330	340	350	360	370	380
Upgrade Elevator, Metals Development Bldg	P0012								230						
Install Fire Sprinklers, Maintenance Shops Building	P0015									110					
Upgrade Access Control System	P0016										435	385	600		
Misc. Other Projects								40		90	100	150	150	500	500
Subtotal KC-03 GPP:		0	515	552	580	580	580	580	580	580	875	885	1,110	870	880

FY2007 - FY2016 Ten Year Site Plan Integrated Facilities and Infrastructure Budget Data Sheet (IFI)	Project Number	Gross Building Area	FY2004 Approp. ($000)	FY2005 Approp. ($000)	FY2006 Target Budget ($000)	FY2007 Target Budget ($000)	FY2008 Target Budget ($000)	FY2009 Target Budget ($000)	FY2010 Target Budget ($000)	FY2011 Target Budget ($000)	FY2012 Target Budget ($000)	FY2013 Target Budget ($000)	FY2014 Target Budget ($000)	FY2015 Target Budget ($000)	FY2016 Target Budget ($000)
SITE NAME: Ames Laboratory															
PROGRAM: Office of Science (BES)															
3.0 Institutional General Plant Project (IGPP)															
Subtotal IGPP Projects		0	0		0	0	0	0	0	0	0	0	0	0	0
4.0 Operating/Expense for Excess Elimination and Other															
4.1 Excess Elimination (demolition, sale, lease, transfer). Show area eliminated in Gross Area column.															
Closeout and D&D, Waste Handling Facility	J63577	9,000	150	150											
Demolish Hydrogen Test Cell Facility	P0017	900			45										
4.1 Subtotal		9,900	150	150	45	0	0	0	0	0					
4.2 All Other (List direct O&E maintenance under 5.1)															
4.2 Subtotal															
Subtotal Operating/Expense Projects			150	150	45	0	0	0	0	0					
TOTAL Capital & Operating Investment:			665	702	625	580	580	580	580	580	875	885	1,110	870	880
TOTAL Overhead Investments (IGPP)			0		0	0	0	0	0	0	0	0	0	0	0

FY2007 - FY2016 Ten Year Site Plan Integrated Facilities and Infrastructure Budget Data Sheet (IFI)	Project Number	Gross Building Area	FY 2004 Approp. ($000)	FY 2005 Approp. ($000)	FY 2006 Budget ($000)	FY 2007 Budget ($000)	FY 2008 Budget ($000)	FY 2009 Budget ($000)	FY 2010 Budget ($000)	FY 2011 Budget ($000)	
SITE NAME: Ames Laboratory											
PROGRAM: Office of Science (BES)											
5.0 Maintenance & Repair											
5.1 Direct Funded (by HQ or Site Program)											
List direct O/E maintenance projects											
Deferred Maintenance Reduction											
KG Replace Electrical Panels, Metals Development Bldg	P0021				11	72	61				
KG Replace Electrical Panels, Wilhelm Hall	P0018						72	29			
KG Replace Electrical Panels, Spedding Hall	P0019							165			
KG Replace Electrical Panels, Service Buildings	P0021								50		
KG Upgrade Switchgear Trip Units	P0020								105		
KG Upgrade Windows, Spedding Hall	P0011								100	255	
Total Direct Maintenance & Repair			0	0	11	72	133	194	255	255	
5.2 Indirect (from Overhead or Space Charges)			832	746	773	802	832	864	896	1,240	*
New CMMS System				133	120	17	17	17	18	18	**
Replace Water Main, Wilhelm Hall				18							
Rehab Lab Space						39	40	41	43	44	
Replace Roof, Mechanical Maintenance Building					50						
Replace Floor Tile, Metals Development Building										66	
Replace Doors, Spedding Hall								13			
Total Indirect Maintenance & Repair			832	897	943	858	889	935	957	1,368	
6.0 Indirect O&E Excess Elimination (demolition, sale, lease, transfer). Show area eliminated in Gross Area column.											
Total Indirect Excess Elimination		0	0	0	0	0	0	0	0	0	

*** Increase in FY2011 due to Metabolomics Resource Facility.**

**** Implementation costs of new CMMS system included in FY2005 and FY2006. FY2007 through FY2011 reflects CMMS system maintenance costs only.**

FY2007 - FY2016 Ten Year Site Plan Integrated Facilities and Infrastructure Budget Data Sheet (IFI)	Project Number	FY 2004 Approp. ($000)	FY 2005 Approp. ($000)	FY 2006 Budget ($000)	FY 2007 Budget ($000)	FY 2008 Budget ($000)	FY 2009 Budget ($000)	FY 2010 Budget ($000)	FY 2011 Budget ($000)
SITE NAME: Ames Laboratory									
PROGRAM: Office Science (BES)									
7.0 Area of Excess Eliminated									
List of projects, by type of funding, with project number, and excess AREA eliminated by fiscal year accomplished.									
Line Item									
GPP									
IGPP									
Operations/Expense									
Closeout and D&D, Waste Handling Facility *	J63577*		9,000						
Demolish Hydrogen Test Cell Facility *	P0017*			900					
Indirect Operations/Expense									
Transfer by sale or lease, or transfer to an outside federal agency									
Subtotal of Excess Facility Area Eliminated		0	9,000	900	0	0	0	0	0
Total Area to be Eliminated Each Year (Demolition, Sale or Transfer Completion Year)		0	9,000	900	0	0	0	0	0
Total Area to be Added by GPP, IGPP, and LI Construction (List Area Under Occupancy Year)		0		0	0	0	0	0	90,000

*** Facility vacated is not in FIMS inventory but is maintained by Ames Laboratory as part of Beneficial Occupancy arrangement with Iowa State University.**

Appendix 1 Summary Overview of SC Facilities at Ames Laboratory

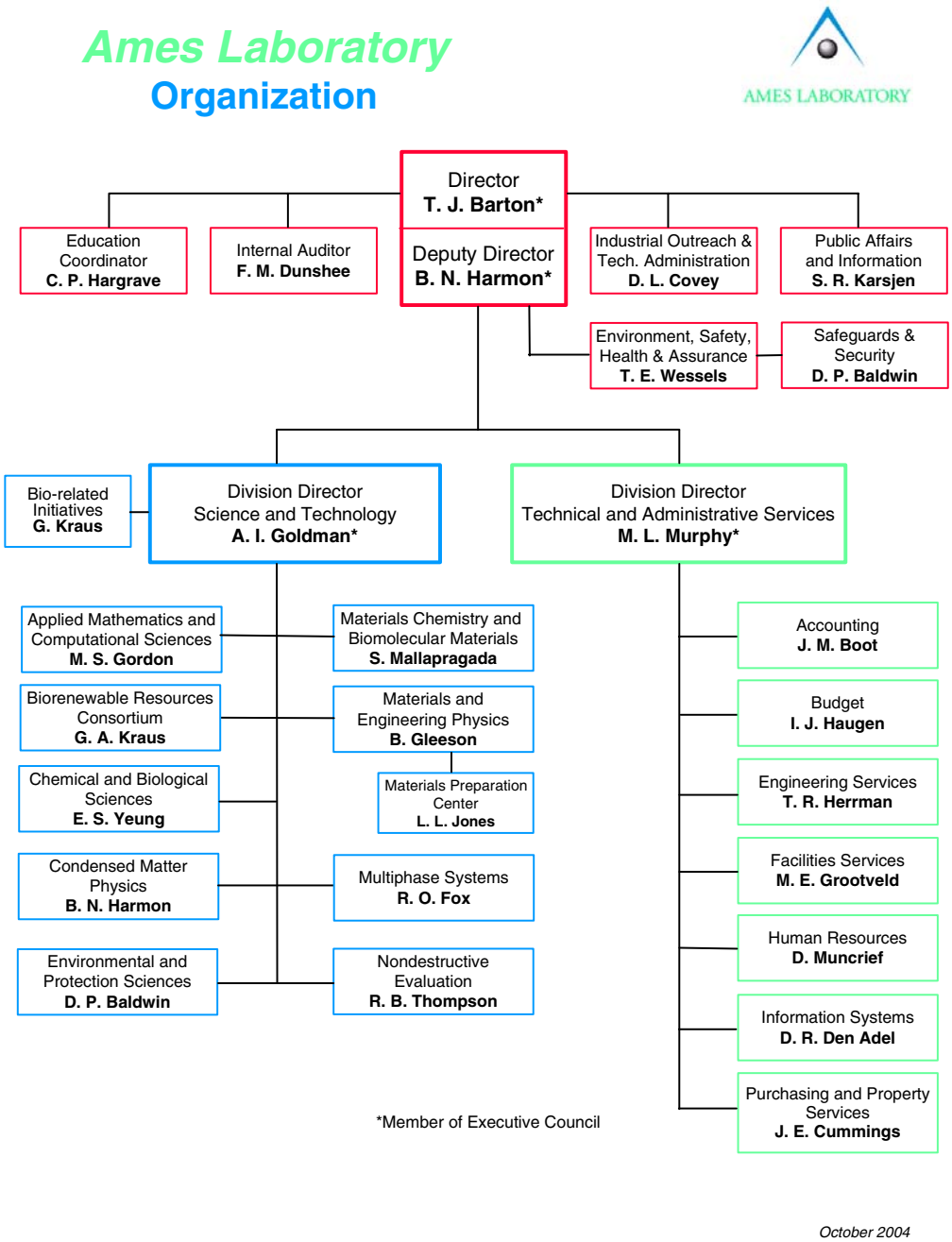
Note: FY04 RPV, MII, DM consistent with FY04 FIMS data. Building, area, age data includes storage sheds referenced in Section 4.15.

Total Building Space (gross ft^2)	327,664
Buildings	12
Largest Occupied Building (gross ft^2): Spedding Hall	107,630
Trailers, number of:	0
Real Property	0
Personal Property	0
Wooden Buildings	0
Excess Facilities:	N/A
Uncontaminated	N/A
Contaminated	N/A
Excess Building Space to be Removed in FY05	9000 S/F*
* There is one uncontaminated building and one contaminated building under a beneficial use agreement that is excess. Responsibility for the operating costs, maintaining the facility, legacy contamination and disposition is retained under the agreement.	
Replacement Plant Value (RPV): Total	$52,987,900
Programmatic (OSF 3000 category)	$0
Non-Programmatic (used for calculating Indices)	$52,987,900
Landlord Program	Office of Science Basic Energy Science
Age of Buildings: Average	37 years
% of space older than 40 years	74%
% of space 30 years or younger	15%
Maintenance Investment Index (MII)	
FY 03	1.49%
FY 04	1.57%
FY 05 (planned)	1.69%
FY 06 (planned)	1.78%
FY 07 (planned)	1.50%
FY 08 (planned)	1.52%
FY 09 (planned)	1.55%
FY 10 (planned)	1.55%
FY 11 (planned)	1.36%

Appendix 1 Summary Overview of SC Facilities at Ames Laboratory (cont.)

Deferred Maintenance (DM) Trend	
DM 2003 (FCI)	$1,558,797 (3.04%)
DM 2004 (FCI)	$1,382,890 (2.61%)
DM 2005 (estimate) (FCI)	$1,389,890 (2.43%)
DM 2006 (estimate) (FCI)	$1,406,840 (2.40%)
DM 2007 (estimate) (FCI)	$1,363,760 (2.27%)
DM 2008 (estimate) (FCI)	$1,260,700 (2.04%)
DM 2009 (estimate) (FCI)	$1,097,680 (1.73%)
DM 2010 (estimate) (FCI)	$974,750 (1.50%)
DM 2011 (estimate) (FCI)	$1,000,794 (0.97%)
Total Summary Condition (DM + RIC) *:	$8,295,890
Deferred Maintenance (DM)	$1,382,890
Rehab and Improvement Cost (RIC)	$6,913,000
*Doesn't include personal property trailers	
Total Summary Condition Index (TSCI): (% of Total RPV) *	15.66%
Facility Condition Index (FCI) (based on DM)	2.61%
Rehab & Improvement Cost Index (based on RIC)	13.06%
ACI (Asset Condition Index from RPAM Order) (1-FCI)	0.974 (good)
AUI (Asset Utilization Index from RPAM Order)	0.991 (excellent)
Leased Assets:	
Square Footage: Total	N/A
Office	N/A
Other	N/A
Annual Lease Costs:	N/A

Appendix 2 Ames Laboratory Organizational Chart



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2.0 Site Summary	2.0	II. Site Summary
3.0 Mission	3.0	III. Mission
4.0 Land Use Plans	4.0	IV. Land Use Plans
5.0 Facilities and Infrastructure (F&I)	5.0	V. Facilities and Infrastructure
5.01 Strategic F&I Goals/Issues	5.01	a. Strategic F&I Goals/Issues
5.02 Condition Assessment Process	5.02	b. F&I Condition Assessment
5.03 Condition Overview	5.04	c. Facilities Mgmt, Space Mgmt/Util
5.04 Facilities Mgmt, Space Mgmt/Util	5.05	d. Facilities Supporting Mission Activities
5.05 Facilities Supporting Mission Act	5.06	e. Site Utility Systems
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5.07 Leasing	5.10	g. Other Facilities
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5.11 Five-Year Sustainment Req	5.10	k. Non-SC Facilities
5.12 Management of Deferred Maint	5.09	l. Value Engineering
5.13 Recapitalization	5.11	m. Five-Year Sustainment Requirements
5.14 Line Item Projects	5.10	n. Maint Program for Nuclear Facilities
5.15 Performance Indicators & Measures	5.12	o. Deferred Maintenance Reduction
5.16 FIMS	5.13	p. Recapitalization
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	5.01/5.12	Appendix 2 Modernization
	5.14/6.0	Appendix 2 Modernization